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CHINA REPORT
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SCIENTISTS AND SCIENTIFIC ORGANIZATIONS

MEMBERS OF DIVISION OF CHEMISTRY, ACADEMY OF SCIENCES INTRODUCED

Beijing HUAXUE TONGBAO [CHEMISTRY] in Chinese No 9, Sep 81 pp 40-52

[Text] When the Chinese Academy of Sciences established its academic divisions in June 1955, there were four of them, namely, the Division of Mathematics, Physics and Chemistry; the Division of Biology and Geosciences; the Division of Technical Sciences and the Division of Philosophy and Social Sciences (the predecessor of the Chinese Academy of Social Sciences). The Division of Biology and Geosciences became the Division of Biology and the Division of Geosciences in 1957. The CCP Central Committee placed the Division of Philosophy and Social Sciences under its jurisdiction in 1961. An independent Division of Chemistry was established in 1981. Now the Chinese Academy of Sciences has five academic divisions: Division of Mathematics and Physics; Division of Chemistry; Division of Biology, Division of Geosciences and Division of Technical Sciences. In establishing its academic divisions, the Chinese Academy of Sciences appointed its first batch of 233 academicians, 172 of whom were in the natural sciences divisions. In 1967 it appointed 21 additional division academicians, 18 of whom were in the natural sciences divisions. The academic divisions were forced to suspend their activities in January 1967. When the Chinese Academy of Sciences decided in the spring of 1979 to resume the activities of the academic divisions, only 117 of the original division academicians were still living. In March 1981 the State Council authorized the Chinese Academy of Sciences to appoint 283 additional new division academicians. This puts the total membership to 400 and 67 of them are academicians of the Division of Chemistry.

At the 4th session of the assembly of the division academicians of the Chinese Academy of Sciences, 19 May 1981, each division elected the members of its standing committee which in turn elected its division director and deputy directors. The director of the Division of Chemistry is Yan Dongsheng and its deputy directors are Huang Yaozeng, Zhang Qinglian and Chen Guanrong. Its standing committee consists of 15 members (listed according to the number of strokes in their surnames): Lu Jiayi, Yan Dongsheng, He Binglin, Min Enze, Wu Haoqing, Zhang Qinglian, Chen Guanrong, Qian Renyuan, Gao Hong, Huang Yaozeng, Cao Benxi, Liang Xiaotian, Guo Musun, Peng Shaoyi and Jiang Lijin.

The Division of Chemistry of the Chinese Academy of Sciences has 16 of its original academicians and 51 new academicians of whom 5 are women. The following are the resumes of the original division academicians and the newly appointed additional division academicians of the Division of Chemistry, the Chinese Academy of Sciences. They are listed according to the number of strokes in their surnames.

The Original Division Academicians

Lu Jiayi [4151 0857 6932]



President, Chinese Academy of Sciences; research fellow and chairman, Fujian Material Structure Institute of the Chinese Academy of Sciences; vice chairman of Board of Directors, China Chemical Society. A native of Tainan Municipality, Taiwan Province, but born in Xiamen, Fujian Province, 1915.

Graduate of chemistry department, 1934, Xiamen University and received a doctorate degree in 1939 from the University of London, England. Specialized in physical chemistry, especially structural chemistry. His research in recent

years includes chemical simulation, biological nitrogen fixation, transitional metals, atomic cluster compounds and model of active nitrogen fixation center of atomic cluster compound.

Ji Yufeng [4764 5148 3488]



Research fellow and vice chairman, Beijing Chemical Reagent Institute, Born in Ningbo, Zhejiang, 1899. A graduate of Hujiang University, 1921, and received a doctorate degree from Yale University, U.S.A., 1928. For years a professor at Zhejiang University and Shanghai Medical College, and research fellow of the Central Academia Sinica, the Chemical Institute of Beijing Academy and the Department of Pharmaceutical Chemistry of the Central Health Academy. Specialized in organic chemistry. His research includes the study of pyrimidine and other heterogeneous natural organic matters, the synthesis of biochemical reagents and anti-cancer drugs.

Wu Xuezhou [0702 1331 0719]



Research fellow and chairman of Changchun Institute of Applied Chemistry, Chinese Academy of Sciences; concurrently chairman of the Institute of Environmental Chemistry of the Chinese Academy of Sciences and member of standing committee, board of directors of China Chemical Society. Born in Pingxiang, Jiangxi, 1902. A graduate of the National Southeastern University, 1925, and received a doctorate degree from the California Institute of Technology, 1931.

Specialized in physical chemistry. Engaged for years in the study of molecular spectrum, homogeneous reaction kinetics and electrochemistry. Recently engaged in organizing and leading scientific research.



Wang You [3076 3731]

Research fellow and chairman of Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences; vice president of the Shanghai branch of the Chinese Academy of Sciences; vice chairman, board of directors of China Chemical Society. Born in Hangzhou, Zhejiang, 1910. A graduate of the Department of Industrial Chemistry, Jinling University, 1931. Received a doctorate degree from the University of Mulheim, Germany, 1937.

Specialized in organic chemistry and biochemistry. His research work in early 1950's covered study of Jumeisu [penicillin?], streptomycin and carbohydrates. His later research included the study of synthetic insulin, structural analysis of active dyestuff and chemical use of starch. Now engaged in the study of nucleic acid, protein, peptide and petroleum yeast.



Zhang Dayu [1728 1129 3558]

Consultant and research fellow of both the Institute of Photosensitive Chemistry of the Chinese Academy of Sciences and the Dalian Institute of Chemistry and Physics; vice chairman, board of directors of China Chemical Society. Born in Jiangying, Jiangsu Province, 1906. A graduate of the department of chemistry, Qinghua University, 1929. Received a doctorate degree from Dresden Industrial University, Germany, 1933. For years professor of Qinghua University and United Southwestern University. Research fellow and chairman of the Institute of Petroleum and the Institute of Chemistry and Physics, Chinese Academy of Sciences.

Specialized in physical chemistry. Engaged in research and organizational work in such areas as surface chemistry, catalysis, petrochemical engineering and high energy fuel.



Zhang Qinglian [1728 7230 5571]

Professor and head of the chemistry department, Beijing University; member of standing committee, board of directors of China Chemical Society; chairman, board of directors of China Spectrography Society; Chinese representative to the Atomic Weight and Isotope Abundance Committee of the International Association of Pure and Applied Chemistry. Born in Changshu, Jiangsu, 1908. Did post-graduate work at Qinghua University 1931-34.

Received a doctorate degree from Berlin University, Germany, 1936. Professor of chemistry, United Southwestern University and Qinghua University.

Specialized in inorganic chemistry. Engaged for a long time in teaching and research in the field of inorganic chemistry. Spent years in the study of isotope chemistry and heavy water. Took part in the trial manufacture and development of different kinds of light isotopes.



Yang Shixian [2799 4258 0341]

Professor and president, Nankai University; concurrently chairman of the Institute of Elemental Organic Chemistry; vice chairman of China Science Federation; chairman, board of directors, China Chemical Society. An ethnic Mongolian born in Hangzhou, Zhejiang, 1896. Graduate of Tsing Hwa College (the predecessor of Qinghua University), 1918. Received a doctorate degree from Yale University, U.S.A. in 1931.

Specialized in organic chemistry and pharmaceutical chemistry. Spent many years in the study of organic synthesis and new pesticides. Trained many specialists in his life-long association with higher education and research work.



Liu Dagang [2692 1129 4854]

Research fellow and honorary chairman, Institute of Chemistry, Chinese Academy of Sciences; honorary chairman, Qinghai Salt Lakes Research Institute; vice chairman, board of directors, China Chemical Society. Born in Yizheng, Jiangsu, 1903. Graduate of the department of chemistry, the Southeastern University. Received a doctorate degree from the University of Rochester, U.S.A., 1949. Served as leader of Salt Lakes Scientific Survey Team, Comprehensive Survey Committee of the Chinese Academy of Sciences; chairman of Qinghai Salt Lakes Research Institute and Institute of Chemistry.

Specialized in inorganic chemistry and physical chemistry. Participated for a long time in research on the utilization of the resources of the Qaidam Basin salt lakes and related chemical studies. Engaged for many years in the organization and administration of scientific research work.

Zhao Zongao [6392 1750 3609]



Chief engineer, Institute of Petrochemical Engineering, Ministry of Petroleum Industry; member of board of directors of both China Petroleum Society and China Chemical Engineering Society; chairman, board of directors, Beijing Energy Resources Society. Born in Rongchang, Sichuan, 1904. Graduate of Nanjing Central University, 1929. Received a doctorate degree from Berlin Industrial University, Germany, 1939. Professor of Tongji University.

Specialized in chemical engineering. Engaged for many years in the study on comprehensive utilization of combustible minerals, synthetic energy fuel and engineering projects and research related to environmental protection.

Hou Xianglin [0186 4382 7792]



Vice Minister, Ministry of Petroleum Industry; chairman, board of directors of China Petroleum Society. Born in Shantou, Guangdong, 1912. Graduate of Chemistry Department, Yanjing University, 1935. Received a doctorate degree in chemical engineering from Carnegie Institute of Technology, U.S.A., 1948.

Served as president of the Petrochemical Engineering Institute.

Specialized in chemical engineering. Engaged for many years in organizing and leading the study of petrochemical engineering and petroleum refining.

Qian Zhidao [6929 1807 5670]



Deputy chief, post-graduate department of China University of Science and Technology; member of board of directors, China Ordnance Society. Born in Shaoxing, Zhejiang, 1910. Graduate of chemistry department, Zhejiang University, 1935. Served as chief, Division of Technology, Second Ministry of Machine Building and assistant to the minister.

Specialized in organic chemistry and chemical engineering. Engaged for a long time in organizing, leading and administering scientific and technological work.



Tang Aoqing [0781 2407 1987]

Professor and president, Jilin University, and concurrently chairman, Institute of Theoretical Chemistry; vice chairman, board of directors of China Chemical Society. Born in Yixing, Jiangsu, 1915. Graduate of chemistry department, United Southwestern University (Beijing University), 1940. Received a doctorate degree from Colombia University, U.S.A., 1949.

Specialized in physical chemistry, especially quantum chemistry. Engaged for many years in teaching and research in the fields of quantum chemistry, high polymer physical chemistry and the theory of molecular orbit and coordination.



Yuan Hanqing [5912 5060 7230]

Research fellow and consultant, China Institute of Scientific and Technological Intelligence; member of standing committee, board of directors, China Chemical Society. Born in the city of Nantong, Jiangsu, 1905, Graduate of chemistry department, Qinghua University, 1929. Received a doctorate degree in chemistry from the University of Illinois, U.S.A., 1931. Professor, Central University and Beijing University.

Specialized in organic chemistry and history of chemistry. Did research work in organic stereochemical isomerization before the liberation. Engaged in the study of the history of chemistry and teaching since the liberation. Now participating in scientific and technological intelligence work.

Huang Ziqing [7806 1311 0615]



Professor, Department of Chemistry, Beijing University, and director of physical chemistry teaching and research laboratory; vice chairman, board of directors, China Chemical Society. Born in Meixian, Guangdong, 1900. Graduate of University of Wisconsin, U.S.A., 1924. Received a doctorate degree from Massachusetts Institute of Technology, U.S.A., 1935.

Specialized in physical chemistry. The data of precision measurement of the triple phase point of water which he published years ago is an internationally recognized standard data. Engaged for a long time in the study of the principles of solutions and chemical thermodynamics, and trained many specialists during his teaching career stretching over half a century.



Liang Shuquan [2733 2885 2938]

Research fellow and laboratory director, Institute of Chemistry of the Chinese Academy of Sciences; member of board of directors, China Chemical Society; advisor to JOURNAL OF CHEMISTRY; consulting editor of the Talanta International Journal of Analytical Chemistry. Born in Zhongshanxian, Guangdong, 1912. Graduate of department of chemistry, Yanjing University, 1933. Received a doctorate degree from the University of Muelheim, Germany, 1937.

Specialized in analytical chemistry. The numerical valence in his doctorate dissertation on "Revision of the Atomic Weight of Iron" which he published years ago has been used by the International Atomic Weight Commission since 1940. His research included the analysis of sulfuric acid radicals, tungsten, molybdenum, rare-earth and fluoride, though currently engaged in micro and trace analysis.

Cai Liusheng [3591 9490 3932]



Professor and head of chemistry department, Jilin University; member, board of directors of China Chemical Society. Born in Quanzhou City, Fujian, 1902. Graduate of Chemistry Department, Yanjing University, 1924. Received a doctorate degree from the University of Chicago, U.S.A., 1932.

Specialized in physical chemistry. Research work included ultraviolet ray polymerization of $(CN)_2$ molecules and photochemical analysis of rotenone. Currently doing research in catalytic kinetics, laser catalysis and photocatalysis.

Newly Appointed Division Academicians

Wang Xu [3769 1645]



Professor and head of pharmaceuticals department of Beijing Medical College; vice chairman, board of directors of both China Chemical Society and China Pharmaceutical Society. Born in Wuxi, Jiangsu, 1912. Graduate of department of chemistry, Fudan University, Shanghai, 1935. Received a doctorate degree from University of Vienna, Austria, 1939.

Specialized in organic chemistry and pharmaceutical chemistry. Upon returning to China in 1940, he took up research in natural organic matters and began in 1960 his research of biochemical study of living things. Currently engaged in studying the synthesis and physiological activities of nucleotide compounds to seek new and more effective anti-cancer drugs.

Jiang Baoren [3769 5508 0088]



Research fellow and vice chairman, Institute of Chemistry of the Chinese Academy of Sciences; member of standing committee, board of directors of China Chemical Society. Born in Yangzhou, Jiangsu, 1906. Graduate of chemistry department, Southeastern University, 1927. Received a doctorate degree from King's College, University of London, 1935.

Specialized in highpolymer synthesis and organic synthesis. Did research in homonymous cyclization of alicyclic compounds, mechanism of polymerization of caprolactum and synthesis of organic silicone high polymers. Now still engaged in high polymer synthesis and organic synthesis.

Shen Panwen [3947 3140 2429]



Vice chairman, Institute of Elemental Organic Chemistry, professor and concurrently director of inorganic chemistry teaching and research laboratory of Nankai University. Member of board of directors, China Chemical Society. Born in Conghuaxian, Guangdong, 1916. Graduate of chemical department, United Southwestern University (Nankai University), 1940.

Specialized in inorganic chemistry. His research in hydrides, recombined hydrides, transitional metals, alloy hydrides, hydrogen absorbent materials.



Lu Peizhang [4151 0160 4545]

Research fellow and vice chairman, Dalian Institute of Chemistry and Physics of the Chinese Academy of Sciences; member of board of editors of CHINA SCIENCE; member of board of directors, China Chemical Society. Born in Yongdingxian, Fujian, 1925. Graduate of chemistry department, college of sciences, Tongji University, Shanghai, 1948.

Specialized in chromatogram analysis. Did research of water gas and synthetic petroleum. His research since 1954 includes the development and application of new technique of gaseous phase and liquid phase of chromatography.



Tian Zhaowu [3944 2507 2976]

Professor, department of chemistry and vice chairman of Institute of Physical Chemistry of Xiamen University; member of board of directors, China Chemical Society; member of standing committee, board of directors of Corrosion and Corrosion Prevention Society. Born in Fuzhou City, Fujian, 1927, Graduate of chemistry department, Xiamen University, 1949.

Specialized in electrochemistry and electronic technology. Engaged in the study of electrode process and electrochemical technique.

Feng Xinde [7458 2450 1795]



Professor of chemistry department and director high polymer teaching and research laboratory, Beijing University; member of board of directors of both China Chemical Society and China Biomedical Engineering Society. Born in Wujiangxian, Jiangsu, 1915. Graduate of chemistry department, Qinghua University, 1937. Received doctorate degree from Notre Dame University, U.S.A., 1948. Professor, department of chemistry, Qinghua University, 1948-52.

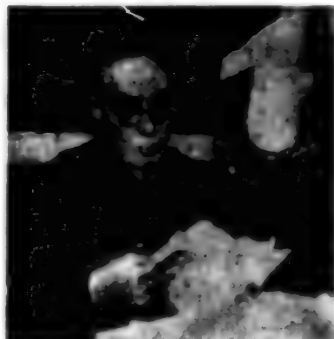
Specialized in high polymer chemistry. His research includes the alkene family monomeric polymerization, copolymerization, cyclic polymerization and open ring polymerization; biomedical high polymers and high polymer photochemistry.



Liu Youcheng [0491 2589 2052]

Professor and head, chemistry department of Lanzhou University; member of standing committee, board of directors of China Chemical Society. Born in Shucheng, Anhui, 1920. Graduate, chemistry department of Central University, 1942. Received a doctorate degree from University of Leeds, England, 1948. Post doctorate research in chemistry, Northwestern University and University of Chicago, U.S.A., 1948-54.

Specialized in organic free radical chemistry. His research includes synthesis of 14 labeled carbon compounds, steroid chemistry, free radical reaction of metal organic compounds, conjugate high polymers and organic semiconductors.



Zhu Yajie [2612 0068 2638]

Professor and vice president of East China Petroleum College; vice chairman, board of directors of China Energy Resources Society; member of standing committee, board of directors of China Chemical Engineering Society. Born in Xinghua-xian, Jiangsu, 1914. Graduate of chemistry department, Qinghua University, 1938. Received masters degree from University of Manchester, England, 1949.

Specialized in chemical engineering and petrochemical engineering. Did research in heat conduct by air-packed column, fine coal fluid bed, low temperature distillation, pressure fluid bed for oxidation of brown coal for humic acid. Currently engaged in solid fuel processing and the development of new energy resources.



Shen Tianhui [3088 1131 1979]

Research fellow and vice chairperson, Shaanxi Institute of Microelectronics; member of board of directors, China Space Flight Society. Born in Hangzhou, Zhejiang, 1923. Graduate of chemistry department, Datong University, Shanghai, 1949. Received advanced training at the Institute of Metallurgy, Academy of Sciences, USSR, 1957-59.

Specialized in analytical chemistry and semiconductor chemistry. Currently engaged in the research and manufacture of large-scale integrated circuits.



Su Yuanfu [5685 0337 1788]

Professor and vice president of East China Chemical Engineering College; chairman of Chemical Engineering Institute; vice chairman, board of directors, China Chemical Engineering Society. Born in Ningbo, Zhejiang, 1910. Graduate of chemistry department, Zhejiang University, 1933. Received a masters degree from University of Manchester, England, 1937.

Specialized in chemical engineering and liquid-liquid extraction. Worked on solution extraction technique to extract ephedrine, uranium and thorium; studied fluid mechanics, remix (?) and mass transfer in rotary extraction tower. Currently engaged in the study of the equipment and basic principles of liquid-liquid extraction and comprehensive utilization of ferrous and nonferrous minerals.



Yan Dongsheng [0917 2639 3932]

Vice president, Chinese Academy of Sciences; Research fellow and chairman of Shanghai Institute of Silicate, Chinese Academy of Sciences; vice chairman, board of directors of China Silicate Society; member of board of directors, China Chemical Society. Born in Hangzhou, Zhejiang, 1918. Graduate of chemistry department, Yanjing University, 1939 and received a master of science from the university in 1941. Received a doctorate degree from University of Illinois, U.S.A., 1949.

Specialized in materials science, Engaged for a long time in the study of inorganic high temperature materials and recombined materials and in organizing and leading scientific research work.



Xiao Lun [5618 0243]

Research fellow of Beijing Atomic Energy Institute and director of its isotope division; member of standing committee, board of directors, China Nuclear Science Society; member, board of directors of China Chemical Society, vice chairman, board of directors of China Atomic Energy Agriculture Society. Born in Pixian, Sichuan, 1911. Graduate of chemistry department, Qinghua University (United Southwestern University), 1939. Received a doctorate degree from University of Illinois, U.S.A., 1951.

Specialized in radiative chemistry. Discovered such radiative isotopes as ^{185}mW , ^{183}Ta , ^{185}Ta . Engaged for many years in the study of radiative chemistry and radiative isotopes.



Wu Zhengkai [0702 1767 6963]

Chief engineer, Bureau of Science and Technology, Second Ministry of Machine Building; member of standing committee, board of directors of both China Chemical Society and China Nuclear Science Society. Born in Yangzhou, Jiangsu, 1913. Graduate of chemistry department, Jinling University, 1934. Graduate of Institute of Physical Chemistry, Cambridge University, England, 1939. Professor and department head of Hunan University, Zhejiang University and Fudan University. Vice chairman of Atomic Energy Institute. Specialized in physical chemistry.



Wu Haoqing [0702 3185 3237]

Professor and department head, Fudan University department of chemistry. Member of standing committee, board of directors of China Chemical Society. Born in Yixing, Jiangsu, 1914. Graduate of Chemistry Department, Zhejiang University, 1935. Taught at Zhejiang University and Fudan University department of chemistry.

Specialized in physical chemistry and electrochemistry. Currently engaged in the study of chemical inlay of lithium in oxidized metal lattice and fast ion conductors.



Xing Qivi [0438 0366 3015]

Professor of chemistry department and director of organic chemistry teaching and research laboratory, Beijing University; member of board of directors, China Chemical Society. Born in Guiyang City, Guizhou Province, 1911. Graduate of chemistry department Furen University, Beijing, 1933. Received a doctorate degree from University of Illinois, U.S.A., 1936. Did post-doctorate research at University of Munich, Germany.

Specialized in organic chemistry. Did work on artificial synthesis of insulin and the synthesis of polypeptide and chloramphenicol. Currently engaged in the study of polypeptide, fragrance of flowers and fruits, teaching and writing textbooks.



He Binglin [0149 3521 2651]

Professor and head of chemistry department, vice chairman of Molecular Biology Institute, Nankai University; member of board of directors, China Chemical Society. Born in Panyu, Guangdong, 1918. Graduate of chemistry department, United Southwestern University, 1942. Received a doctorate degree from University of Indiana, U.S.A., 1952.

Specialized in organic chemistry and high polymer chemistry. Engaged for many years in the study of the structure and properties of cross linked high polymers, ion exchange, separation and purification of absorbent resin, environmental protection, solid phase catalysis and fixation enzyme.



Shi Jun [2514 6874]

Professor and head of department of chemical engineering. Nanjing Chemical Engineering College; member of board of directors, China Chemical Society. Born in Changshu, Jiangsu, 1912. Graduate of chemistry department, Qinghua University, 1934. Received a masters degree from University of Maine, U.S.A., 1936. Studied chemical engineering at Massachusetts Institute of Technology, 1936-38.

Specialized in the process of mass transfer in chemical engineering and thermodynamics in chemical engineering. Did research in paper making and the process of mass transfer in chemical engineering. His teaching career includes professorship and head of chemical engineering departments of Central University, Congqing University and Nanjing University.



Min Enze [7036 1869 3419]

Senior engineer, laboratory director and vice chairman of the Institute of Petrochemical Engineering; member of board of directors, China Petroleum Society. Born in Chengdu, Sichuan, 1924. Graduate of chemical engineering department, Central University, 1946. Received a doctorate degree in chemical engineering from Ohio State University, 1951.

Specialized in the manufacture and development of petroleum refining catalysts. Now still working in the study of new catalysts in this particular area.

Wang Jiading [3076 1367 7844]



Professor and head of both chemistry and chemical engineering departments, Qinghua University; vice chairman, board of directors of China Chemical Engineering Society; member of standing committee, board of directors of China Nuclear Science Society; member of board of directors of China Chemical Society. Born in Chongqing, Sichuan, 1919. Graduate of chemical engineering department, United Southwestern University. Received a masters degree in chemical engineering from the Massachusetts Institute of Technology, U.S.A., 1945. Professor of chemical engineering department, Nankai University; professor and assistant head of chemical engineering department,

Tianjin University. Specialized in chemical engineering. Engaged for many years in teaching and research in the field of radiative chemical engineering and the process of mass transfer separation in chemical engineering.

Wang Dexi [3076 1795 3556]



Research fellow and vice chairman of Beijing Atomic Energy Institute; member of board of directors of both China Chemical Society and China Chemical Engineering Society; member of standing committee, board of directors, China Nuclear Science Society. Born in Guanyunxian, Jiangsu, 1913. Graduate of chemistry department, Qinghua University, 1935. Received a doctorate degree from Massachusetts Institute Technology, U.S.A., 1946. Professor and head of chemical engineering departments of Nankai University and Tianjin University. Engaged for a long time in nuclear engineering.

Zhang Cunhao [1728 1317 3185]



Research fellow and vice chairman, Dalian Institute of Chemistry and Physics of the Chinese Academy of Sciences; member of board of directors of both China Chemical Society and China Space Flight Society. Born in Wudi, Shandong, 1928. Graduate of chemical engineering department, Central University, 1947. Received a masters degree from University of Michigan, U.S.A., 1950.

Specialized in chemical reaction kinetics. Engaged for many years in combustion and chemical laser.



Wu Chi [2976 6688]

Chief engineer and vice president of Petrochemical Engineering Institute. Member of board of directors, China Petroleum Society. Born in Hangxian, Zhejiang, 1914. Graduate of chemistry department, Qinghua University, 1936. Received a doctorate degree from Massachusetts Institute of Technology, U.S.A., 1939.

Specialized in petroleum refining and chemical engineering. Engaged for a long time in teaching and scientific research. Once professor, department head and assistant dean of Beijing Petroleum College. Now doing research in petroleum refining and the development new petrochemical engineering technology.



Chen Ruyi [7115 5423 3768]

Professor and vice chairman of the Institute of Elemental organic chemistry, Nankai University. Vice chairperson of China Pesticide Society, member of board of directors of China Chemical Society. Born in Minhou, Fujian, 1919. Graduate of chemistry department, United Southwestern University, 1942. Received a doctorate degree from University of Indiana, U.S.A. 1952.

Specialized in organic chemical synthesis. Engaged for many years in the study of new herbicide, germicide, plant growth regulators, organic pesticides and organic phosphides.



Chen Guanrong [7115 0385 2837]

Chief engineer and deputy chief, Bureau of Science and Technology, Ministry of Chemical Industry, vice chairman and assistant secretary general of China Chemical Engineering Society. Born in Shanghai, 1915. Graduate of chemistry department, Qinghua University, 1936. Received a masters degree from Carnegie Institute of Technology, U.S.A., 1948.

Engaged for a long time in chemical engineering planning and the organization and administration of scientific and technological work. Served as chairman and chief engineer of the Institute of Planning, Ministry of Chemical Industry.



Chen Rongti [7115 2837 1879]

Professor and director of physics and chemistry research laboratory of chemistry department, Nankai University. Born in Dianjiang, Sichuan, 1919. Graduate of chemistry department, Sichuan University, 1941. Graduate of post graduate school, Wuhan University, 1944. Received a doctorate degree from the University of Indiana, 1952.

Specialized in physical chemistry and inorganic chemistry. Engaged for many years in the study of complex chemical compounds. Now editor of international "Review of Complex Chemical Compounds."



Chen Jiayong [7115 1367 6978]

Research fellow and vice chairman, Institute of Chemical Metallurgy of the Chinese Academy of Sciences. Member of board of directors of China Chemical Society. Born in Chengdu, Sichuan, 1922. Graduate of chemistry department, Central University, 1943. Received a doctorate degree in chemical engineering from University of Illinois, U.S.A., 1951.

Specialized in chemical engineering. Engaged for many years in wet metallurgy and chemical reaction engineering.

Cha Quanxing [2686 0356 1840]



Professor and head of chemistry department, Wuhan University. Member of board of directors, China Chemical Society. Born in Jingxian, Anhui, 1925. Graduate of chemistry department, Wuhan University, 1950. Studied at Electrochemistry Research Laboratory, Moscow University, USSR.

Specialized in electrode process kinetics. Engaged for many years in teaching and research in electrochemistry.



Qian Renyuan [6929 0068 0337]

Research fellow and chairman of Institute of Chemistry, Chinese Academy of Sciences. Member of standing committee, board of directors, China Chemical Society. Born in Changshu, Jiangsu, 1917. Graduate of chemistry department, Zhejiang University, 1939. Did research work in chemistry at University of Wisconsin, U.S.A., 1944-48. Associate professor of chemistry department of Xiamen University and Zhejiang University since 1948.

Specialized in physical chemistry and high polymer physics. Engaged for many years in the study of the structure and properties of high polymers. His current research includes the combination of activated radicals among high polymer molecules and organic solid conductance.



Qian Baogong [6929 0202 0501]

Research fellow and vice chairman, Changchun Institute of Applied Chemistry of the Chinese Academy of Sciences; vice president of Wuhan branch of the Chinese Academy of Sciences; member of board of directors, China Chemical Society. Born in Jiangying, Jiangsu, 1916. Graduate of chemistry department, Wuhan University, 1940. Received a masters degree from Polytechnical Institute of Brooklyn, U.S.A., 1949.

Specialized in high polymer chemistry and high polymer physics. His research all these years includes photosensitive cross linkage of polyethylene, high polymer solid state reaction and inversion, the characteristics of polydiene rubber.



Gao Xiaoxia [7559 1420 7209]

Professor of chemistry department and head of analytical chemistry teaching and research laboratory, Beijing University; member of board of directors, China Chemical Society. Born Xiaoshan, Zhejiang, 1919. Graduate of chemistry department, Jiaotong University, 1944. Received a masters degree from New York University, U.S.A., 1951.

Specialized in electrochemical analysis. Engaged for many years in teaching and research in electroanalysis and polarographic analysis.



Gao Yisheng [7559 1837 3932]

Research fellow and chairman, Shanghai Pharmacology Institute of the Chinese Academy of Sciences; member of board of directors, China Chemical Society. Born in Nanjing, Jiangsu, 1910. Graduate of chemistry department, Central University, 1934. Received a doctorate degree from Oxford University, England, 1950.

Specialized in organic chemistry and pharmaceutical chemistry. Engaged for many years in the study of the chemistry of natural products, such as the structure and synthesis of Lianxinjian [5571 1800 4354] and the synthesis of Meidengsu [5019 4098 4790].



Gao Jiyu [7559 3444 1342]

Professor and vice president of Nanjing University; vice chairman, board of directors, China Chemical Society. Born in Wuyang, Henan, 1902. Graduate of the University of Washington, U.S.A., 1927. Received a doctorate degree from University of Illinois, U.S.A., 1931.

Specialized in organic chemistry. Engaged for a long time in teaching, research, organizing and leading scientific and technological work. Dean and head of the college of sciences, Nanjing University. Now directing young teachers in research on organic synthesis reaction.



Gao Chenheng [7559 2082 5899]

Professor of chemistry department and head of research laboratory of principles of organic chemical structures; member of board of directors, China Chemical Society. Born in Beijing, 1911. Graduate of the chemistry department, Qinghua University, 1934. Received a doctorate degree in chemistry from Harvard University, U.S.A., 1946.

Specialized in organic chemistry. Engaged for many years in research of the structure and properties of organic chemical compounds. Now teaching and doing research in physical organic chemistry.



Gao Hong [7559 7703]

Professor of chemistry department and head of analytical chemistry teaching and research laboratory, Nanjing University; member of board of directors, China Chemical Society; vice chairman, board of directors of China Analytical Instruments Society; consulting editor to "Trends of Analytical Chemistry" of International Journal of Analytical Chemistry. Born in Qianxian, Shaanxi, 1918. Graduate of chemistry department, Central University, 1943. Received a doctorate degree from University of Illinois, U.S.A., 1947.

Specialized in analytical chemistry. Engaged for many years in studying electrochemical analysis and new methods of analysis and in teaching.



Xu Guangxian [1776 0342 2009]

Professor of chemistry department and head of teaching and research in organic chemistry laboratory, Beijing University; vice chairman, board of directors of China Rare-earth Society; member of board of directors of China Chemical Society. Born in Shaoxing, Zhejiang, 1920. Graduate of chemistry department, Jiaotong University, 1944. Received a doctorate degree from Columbia University, U.S.A., 1945.

Specialized in physical chemistry. Engaged for many years in teaching and doing research in quantum chemistry, complex and extraction chemistry.



Tang Youqi [0781 2589 4388]

Professor of chemistry department and head of material structure research laboratory, Beijing University; chairman of Physical Chemistry Institute; member of board of directors, China Chemical Society. Born in Nanhui, Shanghai, 1920. Graduate of chemistry department, Tongji University, 1942. Received a doctorate degree from California Institute of Technology, U.S.A., 1950.

Specialized in physical chemistry and structural chemistry. Engaged for a long time in teaching and research.



Ni Jiazang [0242 0857 4957]

Associate research fellow, laboratory head and vice chairman of Changchun Institute of Allied Chemistry. Member of board of directors of both China Chemical Society and China Rare-earth Society. Born in Jiaxing, Zhejiang, 1932. Graduate of chemistry department, Tongji University, 1952. Received associate doctorate degree from the Institute of Inorganic and General Chemistry, USSR, 1961.

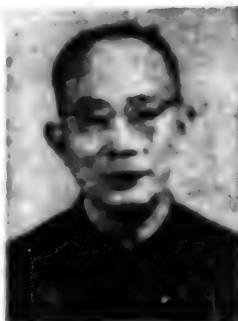
Specialized in complex chemistry. Now engaged in studying rare-earth complex chemistry.



Gu Yitong [7357 5065 2639]

Professor of chemistry department and head of inorganic chemistry teaching and research laboratory, Fudan University; member of board of directors, China Chemical Society. Born in Suzhou, Jiangsu, 1903. Graduate of Dongwu University, 1923. Received a doctorate degree from University of Chicago, U.S.A., 1935.

Specialized in rare elements chemistry. His research over the years includes tungsten chemistry, organic reagents, solution extraction, rare-earth compounds. Now engaged in studying the manufacture, properties and use of tungsten compounds.



Huang Weiyuan [7806 4850 0997]

Research fellow, vice chairman of Shanghai Institute of Organic Chemistry of the Chinese Academy of Sciences; assistant editor of CHEMICAL JOURNAL. Born in Putian, Fujian, 1921. Bachelor of Science, Xiehe University, Fujian, 1943; Master of Science, Lingnan University, 1949; doctor of philosophy, Harvard University, U.S.A., 1952.

Specialized in organic chemistry. His research includes natural organic chemistry and organic fluorine chemistry.



Huang Liang [7806 6852]

Research fellow and head of synthesis laboratory of Institute of Pharmacology, Chinese Academy of Medical Sciences; member of board of directors, China Chemical Society. Born in Shanghai, 1920. Graduate of chemistry department, St. John's University. Received a doctorate from Cornell University, U.S.A., 1949.

Specialized in organic chemistry and pharmaceutical chemistry. Her research includes the study of steroid hormone and anti-tumor drugs.



Huang Yaozeng [7806 5069 2582]

Research fellow and vice chairman, Shanghai Institute of Organic Chemistry of Chinese Academy of Sciences; assistant head of Department of Modern Chemistry, China University of Science and Technology; member of board of directors, China Chemical Society. Born in Nantong, Jiangsu, 1912. Graduate of chemistry department, Central University, 1934.

Specialized in organic chemistry. His research includes steroid hormones, naphthalene and organic fluorine compounds, and most recently, metallorganic chemistry.



Gao Benxi [2580 2609 3588]

Professor, chief engineer and deputy chief of Bureau of Production Technology, Second Ministry of Machine Building; chairman of board of directors of both China Nuclear Science Society and Nuclear Chemical Engineering Society. Born in Shanghai, 1915. Graduate of chemistry department, Qinghua University, 1938. Received a doctorate in chemical engineering from King's College, University of London, England, 1946.

Specialized in chemical engineering. Engaged for a long time in teaching chemical engineering and leading scientific and technological work. Served as professor and head of chemical engineering department, Qinghua University and vice president of Beijing Petroleum College.



Liang Xiaotian [2733 2556 1131]

Research fellow and deputy director of synthesis laboratory, Institute of Pharmaceutics of the Chinese Academy of Medical Sciences; part-time professor of chemistry department, Beijing University; part-time research fellow of Institute of Chinese Native Medicine of the Academy of Chinese Native Medicine; member of board of directors, China Chemical Society. Born in Wuyang, Henan, 1923. Graduate of chemistry department, Central University, 1946. Received a doctorate degree in chemistry from University of Washington, Seattle, U.S.A., 1951.

Specialized in organic chemistry and natural products chemistry. His research over the years includes natural products chemistry and stereochemistry.



Guo Musun [6753 1970 1327]

Research fellow and chairman of Institute of Chemical Engineering Metallurgy, Chinese Academy of Sciences; vice chairman, China Chemical Engineering Society; member of board of directors, China Chemical Society; member of standing committee, board of directors of China Metallography Society. Born in Chaozhou, Guangdong, 1920. Graduate of chemistry department, Hujiang University, Shanghai, 1943. Received a masters degree in chemical engineering from Princeton University, U.S.A. 1946.

Specialized in chemical engineering. His research includes dispersed fluidization in chemical engineering metallurgy, pneumatic multilayer fluid bed and so on.



Guo Xiexian [6753 3610 6343]

Research fellow and vice chairman of Dalian Institute of Chemistry and Physics of Chinese Academy of Sciences; member of board of directors, China Chemical Society. Born in Hangzhou, Zhejiang, 1925. Graduate of department of applied chemistry, Army Engineering College, 1946. Engaged for many years in the study of physical chemistry and catalysis in the chemistry department of Central University, the Petroleum Institute of the Chinese Academy of Sciences and its Institute of Chemistry and Physics. Specialized in chemical catalysis, both applied and theoretical.



Peng Shaoyi [1756 1421 6654]

Research fellow and chairman of Shanxi Coal Chemistry Institute, Chinese Academy of Sciences; part-time professor of both chemistry and chemical engineering departments of Qinghua University and Nankai University; member of board of directors, China Chemical Society. Born in Liyang, Jiangsu, 1917. Graduate of chemistry department, Wuhan University, 1939. Pursued advanced studies in the United States, 1947-49.

Specialized in petrochemistry. Now doing research in energy resources chemistry and catalysis.

Ji Ruyun [1518 3067 6663]



Research fellow and vice chairman of Shanghai Pharmaceutical Institute, Chinese Academy of Sciences; part-time professor of Huadong Chemical Engineering College and Huazhong Engineering College; member of board of directors of both China Chemical Society and China Pharmaceutical Society. Born in Shanghai, 1918. Graduate of chemistry department, Central University, 1941. Received doctorate degree from University of Birmingham, England, 1950.

Specialized in organic chemistry and pharmaceutical chemistry. His research all these years includes antischistosomiasis drugs, nerve system drugs and cardiovascular system drugs. His current research includes studies of the application of quantum chemistry to pharmaceuticals.

Jiang Lijin [5592 7787 6855]



Research fellow and head of laboratory of Photosensitive Chemistry Institute, Chinese Academy of Sciences; member of standing committee, board of directors of China Chemical Society. Born in Hangzhou, Zhejiang, 1919. Graduate of post-graduate department of Furen University, 1946. Received a doctorate degree in pharmacology, University of Minnesota, U.S.A., 1951.

Specialized in organic chemistry. Her research includes pharmaceuticals, paints, heterocyclic compounds and photosensitive materials. Currently engaged in research of biophotochemistry and structural chemistry.



Jiang Mingqian [5592 2494 6197]

Research fellow and head of structural laboratory, Chinese Academy of Sciences; member of standing committee, board of directors, China Chemical Society. Born in Pengxi, Sichuan, 1910. Graduate of chemistry department, Beijing University, 1935. Received a doctorate degree from University of Illinois, U.S.A. 1944.

Specialized in organic chemistry and pharmaceutical chemistry. Engaged for many years in theoretical organic chemistry and discovered a homogeneous linear rule in his study of the relations of quantitative structural properties.



Cai Qirui [5591 0796 3843]

Professor and vice president of Xiamen University; member of board of directors, China Chemical Society. Born in Tongan, Fujian, 1913. Graduate of chemistry department, Xiamen University, 1937. Received a doctorate degree from Ohio State University, 1950.

Specialized in physical chemistry. His research projects all these years include catalysis, structural chemistry, chemical kinetics, chemical simulation and biological nitrogen fixation, and he has completed a model of nitrogen fixation center in parallel double cubic alkyl type atomic cluster. Current research includes theory of complex catalysis and frontier science of catalysis.



Dai Anpang [2071 1344 6721]

Professor and head of chemistry department, Nanjing University; member of standing committee, board of directors of China Chemical Society. Born in Dantu, Jiangsu, 1901. Graduate of chemistry department, Jinling University, 1924. Received a doctorate degree from Columbia University, New York, U.S.A., 1931. Founder and editor-in-chief, 1934-46, of CHEMISTRY (predecessor of HUAXUE TONGBAO), journal of China Chemical Society.

Specialized in inorganic chemistry and coordination chemistry (?). While teaching, he has done research for many years in colloid chemistry, coordination chemistry, silicic acid and its salts, synthesis of alkaline metallic cocatalysts and ammonium ferric catalysts.

Architecture

AUTHOR: YI Chou

ORG: None

TITLE: "Symposium on Hospital Design"

SOURCE: Beijing JIANZHU XUEBAO [ARCHITECTURAL JOURNAL] in Chinese No 12, 20 Dec 81 pp 1-20

TEXT OF ENGLISH ABSTRACT: A symposium on hospital design was held on 4-11 May in Beijing, which nearly 100 persons from architectural and medical circles attended. More than 90 papers were circulated. The main points discussed in the meeting include the following:

Regarding land and building area indexes, it is pointed out that hospitals with more stories and more compact plans will lead to economical use of land. Someone proposed that the prevailing land index could be lowered to 70-80 m²/bed. On the other hand, the prevailing building area index is inadequate due to developments in medical apparatus and instruments. A building area of 80 m²/bed is recommended for major hospitals in large cities.

It is pointed out that network and plot planning of hospitals have not been receiving due attention for producing satisfactory results. Space for extension should be well considered in plot plans of hospitals in adaptation to the rapid development of medical apparatus and instruments.

[Continuation of JIANZHU XUEBAO No 12, 20 Dec 81 pp 1-20]

Problems like the number of beds per nursing unit, the provision of single or double corridors, the ward rooms with northern exposure, the shortening of ward rounds, etc., have been discussed, but no unanimous opinions have been reached.

The nursing of emergency and serious cases has been a vulnerable sector in hospitals. Monitor wards have been established in some of the hospitals, which should be promoted.

Regarding the problem of modernization, it is agreed that emphasis should be given to singling out the principal contradictions, renovating according to local conditions and conducting experiments in selected places.

AUTHOR: None

ORG: None

TITLE: "Six Proposals by ASC"

SOURCE: Beijing JIANZHU XUEBAO [ARCHITECTURAL JOURNAL] in Chinese No 12, 20 Dec 81
p 22

TEXT OF ENGLISH ABSTRACT: The Architectural Society of China held its 11th meeting of the 5th Standing Committee on 14 October, at which 6 proposals were made on intercourse with the architectural circle in Taiwan in view of making better acquaintance and serving as a bridge in the great task of reunification. The proposals are as follows:

1. We propose that specialists, scholars, researchers, teachers and students on both sides of the straits make visits, interviews and investigations on a reciprocal basis, and exchange publications, information, teaching materials and academic experiences.
2. We welcome colleagues from Taiwan to attend academic meetings in various fields sponsored by the ASC and to join discussions on technical problems in the construction of the motherland.
3. We welcome colleagues from Taiwan to take part in the design competitions sponsored by the ASC.
4. We welcome colleagues from Taiwan to come to the mainland to undertake design, construction and consultation jobs.

[Continuation of JIANZHU XUEBAO No 12, 20 Dec 81 p 22]

5. In the election of the Fifth Committee of the ASC in October, 1980, five places were reserved for colleagues from Taiwan. It is hoped that these vacancies be filled as soon as possible.
6. We propose that commissions composed of delegates from the mainland and Taiwan be organized to take part in the activities sponsored by international architectural organizations.

Positive response from the architectural circle in Taiwan is expected.

AUTHOR: CHEN Shi

ORG: None

TITLE: "Source and Stream of Design"

SOURCE: Beijing JIANZHU XUEBAO [ARCHITECTURAL JOURNAL] in Chinese No 12, 20 Dec 81
pp 23-28

TEXT OF ENGLISH ABSTRACT: The author holds a view different from that expressed in the two articles, "Domestic Dwellings--Source of Creation" and "The Style Roots in the People." He explains that the development of productive forces changes the mode of living which, in turn, calls for corresponding dwellings. From the living on boats to that in urban apartments, it can be seen that life is the source of architectural design. Any vernacular dwelling of excellent design, and even any great work of architecture, can never be the source of architectural design, neither theoretically nor practically. The style of modern architecture has to be created by modern architects through diligent labor, and not from vernacular dwellings. The slogan of "socialistic content and nationalistic form" is self-contradictory, as architectural style in the modern age of capitalism has become the individual style of the architect in place of nationalistic style. In the period of socialism, there is no need to bring styles of a thousand architects into one single, so-called nationalistic, style. The author also points out that vernacular architecture is only one part of our tradition, from which no source of modern design can be found.

AUTHOR: SHANG Kuo

ORG: None

TITLE: "A Simple and Flexible Structural System"

SOURCE: Beijing JIANZHU XUEBAO [ARCHITECTURAL JOURNAL] in Chinese No 12, 20 Dec 81
pp 32-41

TEXT OF ENGLISH ABSTRACT: The author points out that research on the vernacular wooden structure is in no way less valuable than that on palaces and temples. An analysis of the basic construction form of vernacular wooden structures is first made, from which it is shown that independence and integrity are the characteristics. From case studies it is shown that Chinese traditional architecture, especially vernacular architecture, has already borne the characteristics of modular coordination, standardization and pre-fabrication, being an advanced structural system early in the old days.

Further analysis has been made by the author of the adaptability to variations in building depth and flexibility in plan division, to variations in story-height and vertical separation, to extension and renovation of subsidiary annexes, to use of cantilever elements of various forms and to different topographical and climatic conditions, as well as of artistic features.

[Continuation of JIANZHU XUEBAO No 12, 20 Dec 81 pp 32-41]

While the search for a simple and flexible structural system for present-day China is a task before Chinese architects, traditional vernacular wooden structures offer great enlightenment.

AUTHOR: SHEN Kuixu
et al.

ORG: None

TITLE: "Design and Allotment in Housing"

SOURCE: Beijing, JIANZHU XUEBAO [ARCHITECTURAL JOURNAL] in Chinese No 12, 20 Dec 81
pp 59-65

TEXT OF ENGLISH ABSTRACT: Housing design is usually classified as one-room, two-room or three-room apartments, while in allotment the number of persons in each family is taken as the basis. This discrepancy in units causes difficulties in allotment. The authors propose that housing design be based on the number of persons in each family. The concrete measures are: 1. Five housing types should be classified according to two, three, four, five or six persons per family as well as different family constitutions. 2. Within the specified floor area index, consideration should be given to room separation and furniture arrangement, so that the number of persons designed for can have ample space as well as proper separation. 3. Based on standard components, various kinds of plan units should be designed so as to allow flexible combinations.

The authors have worked out a scheme with an average building area of 43 sq m for each suite, each complete with a living room, bedroom, kitchen and toilet. Compared with Beijing's type "79H1-2," it is nearly 11 sq m less for each suite.

9717

CSO: 4011/2

Civil Engineering

AUTHOR: LIU Zuolin [0491 0155 7207]

ORG: Shanghai Municipal Engineering and Design Academy

TITLE: "The Chongqing City Bridge Across the Changjiang River--Its Design, Construction and Tests"

SOURCE: Beijing TUMU GONGCHENG XUEBAO [CHINA CIVIL ENGINEERING JOURNAL] in Chinese No 4, 1981 pp 1-15

TEXT OF ENGLISH ABSTRACT: This paper presents the design, construction and test peculiarities of the Chongqing Changjiang River Bridge, a prestressed concrete T-frame bridge of cast-in-place cantilever segmental construction. The bridge consists of eight spans, totaling 1,120 meters with a main span of 174 meters (the longest of the same type in China). A detailed analysis was made for the pier shaft to meet the requirements of heavy ship impacts. The pier situated in the main channel was built up on a steel caisson foundation. An innovation of a sliding centerform casting was first used in concreting the box girder segments. In the paper, the stress distribution in the particular sections is described, the results by space model analysis and those based on plane-section assumption are compared, and the deflection and camber of the girders are discussed. Some results of the acceptant test are listed and reviewed.

AUTHOR: XIE Dingyi [6200 1353 5030]

WU Zhihui [1566 1807 6540]

GUO Yaotang [6753 5069 1016]

ORG: All of the Department of Water Conservancy, Northwestern Agricultural College

TITLE: "Application of Limit Equilibrium Theory to the Analysis of Dynamic Failure Process of Saturated Sand"

SOURCE: Beijing TUMU GONGCHENG XUEBAO [CHINA CIVIL ENGINEERING JOURNAL] in Chinese No 4, 1981 pp 17-28

TEXT OF ENGLISH ABSTRACT: The limit equilibrium theory has been widely used in soil statics. In this paper, the feasibility and ways of its application to the analysis of dynamic failure process of saturated sand are studied. Based on the cyclic triaxial test results and taking into account the behavior of cyclic loading, the authors introduce the concept "Transient Limit Equilibrium," demonstrate the existence of both the two critical points characterizing the states of transient limit equilibrium and the three developing stages in the dynamic failure process, and discuss the specificities of the shear strength envelopes in soil dynamics. Finally, a mechanism of liquefaction is presented based on the "Transient Limit Equilibrium" theory.

AUTHOR: LIU Xila [0491 6007 2139]
ZHANG Guojing [1728 0948 4842]

ORG: LIU of the Sichuan Architectural Sciences Research Institute; ZHANG of the Southwest Electric Power Design Academy

TITLE: "Nonlinear Analysis of Prestressed Centrifugal Concrete Power Pole with Ring-shaped Cross Section"

SOURCE: Beijing TUMU GONGCHENG XUEBAO [CHINA CIVIL ENGINEERING JOURNAL] in Chinese No 4, 1981 pp 29-38

TEXT OF ENGLISH ABSTRACT: The failure of prestressed centrifugal concrete power poles of ring-shaped cross section under eccentric load is mainly due to buckling or lateral bending. In this paper, analysis of such failure is carried out by use of computer and, based on the results from tests conducted on 27 pipe columns and 12 power poles of large slenderness ratio, a stress-strain curve suitable for non-linear analysis of the centrifugal concrete is presented, thus ensuring a fair accuracy of calculation in computer work. In addition, the effect of slenderness ratio, eccentricity, amount of prestressing and the distribution of external moment on the lateral deflection are discussed. On this basis, empirical formulas for calculating the buckling load and maximum deflection of the power pole are given.

AUTHOR: PAN Changshi [3382 2490 1395]

ORG: Department of Railway Engineering, Lanzhou Railway College

TITLE: "Finite Element Analysis of Shotcrete Lining in Loess Tunnel"

SOURCE: Beijing TUMU GONGCHENG XUEBAO [CHINA CIVIL ENGINEERING JOURNAL] in Chinese No 4, 1981 pp 39-53

TEXT OF ENGLISH ABSTRACT: The Yaoxianhe single-track tunnel driven through the old loess Q_2 has an overburden of 40 m and a total length of 311 m. Shotcrete was first adopted as a permanent lining on a section 55 m long. Linear elastic and nonlinear finite element analyses were conducted in order to prove theoretically the feasibility of such an attempt. Most parameters used in the calculation were determined by field tests and laboratory experiments. In the linear elastic analyses, it was assumed that the excavation and the lining of the tunnel were performed at one drift and the stresses and deformations of the soil mass and lining computed accordingly. In the nonlinear analyses, the time effect of the stage-by-stage excavation and lining work was considered, and the hyperbolic constitutive relation suggested by Duncan was observed, while it was shown in the experiments that the initial moduli of the loess were stress-independent. Results from the analysis indicate that the linear elastic analysis, taking no account of both the time effect of the stage-by-stage excavation and the nonlinear stress-strain relationship of materials, gives rise to underestimated deformation values and overestimated stress values of the

[Continuation of TUMU GONGCHENG XUEBAO No 4, 1981 pp 39-53]

lining, while the nonlinear analysis, taking into account all these aspects, thus reflecting the real interaction of the lining and surrounding mass, gives deformation values consistent with the measured ones and gives more reasonable stress values. Shotcrete used as support of loess tunnels can secure their stability while the strength of the shotcrete layer is governed by its shear resistance.

AUTHOR: LUO En [5012 1869]

ORG: Department of Mechanics, Zhongshan University

TITLE: "On Some Problems of Bending of Thick Plates on Elastic Foundations"

SOURCE: Beijing TUMU GONGCHENG XUEBAO [CHINA CIVIL ENGINEERING JOURNAL] in Chinese No 4, 1981 pp 57-70

TEXT OF ENGLISH ABSTRACT: In this paper, according to the analysis of the behavior of the internal forces of thick plates, the solution of the basic equations of various models of thick plates on the Winkler-type or Pasternak-type foundation is reduced to one concerning two displacement functions, w and ψ , and the general forms of the solutions for various models are derived. For simply supported polygonal thick plates on elastic foundations, it is proved that ψ vanishes identically, hence the equations of thick plates on elastic foundations are reduced to a differential equation of the fourth degree for the function w , similar to that of thin plates on the Pasternak-type foundation. In addition, the problem of the solution of circular thick plates on elastic foundations is also discussed.

AUTHOR: LI Guibai [2621 0964 4101]
CHEN Fujun [7115 6534 0689]

ORG: Both of the Harbin Architectural Engineering College

TITLE: "Method of Technological Calculation of Settling Tank for Peak Type High-turbid Water"

SOURCE: Beijing TUMU GONGCHENG XUEBAO [CHINA CIVIL ENGINEERING JOURNAL] in Chinese No 4, 1981 pp 71-80

TEXT OF ENGLISH ABSTRACT: The solid concentration of peak type high-turbid water is characterized by its solid content varying with time. Dividing the peak hour curve into many subintervals of time and assuming that the solid concentration within each subinterval remains approximately constant, the volume of high turbid water zone in the settling tank can be calculated by definite integral. In this way formulas expressing the process of sedimentation and thickening of such a high turbid water in the tank are established, and supported by experiments made in a large pilot tank. On this basis, a method of technological calculation of the settling tank for peak type high turbid water is presented with an example showing the calculation procedures in detail.

AUTHOR: ZHANG Qisen [1728 6386 2773]
TANG Xisheng [0781 7185 3932]

ORG: Both of the Hunan Transportation and Communication Research Institute

TITLE: "A New Method for Simplifying the Calculation of Multilayer Pavements"

SOURCE: Beijing TUMU GONGCHENG XUEBAO [CHINA CIVIL ENGINEERING JOURNAL] in Chinese No 4, 1981 pp 81-90

TEXT OF ENGLISH ABSTRACT: This paper presents a simplified method for calculating the displacements and stresses in pavement of a multilayer elastic system.

In the conversion of the layer equivalency, this method considers the load spreading with the depth of pavement. For pavement design, a structural coefficient is introduced for the calculation of pavement thickness, thus making the results of this method approach closer to the exact solution of the multilayer system.

In comparison with the equivalent layer method currently used in China, this one has the advantages of higher accuracy and wider scope of application. Furthermore, it may be considered that the new method is clearer in conception, requires simpler calculation than the similar ones adopted abroad (such as the modified Odemack's Method), hence it is easier mastered.

9717
CSO: 4009/249

Computers

AUTHOR: LIU Lianshuo [0491 6647 4311]

ORG: Ground System Division, Space Science and Technology Center, Chinese Academy of Sciences

TITLE: "A Practical Computer System for Microdensitometer"

SOURCE: Beijing ZIDONGHUA XUEBAO [ACTA AUTOMATICA SINICA] in Chinese No 1, 1982 pp 1-8

TEXT OF ENGLISH ABSTRACT: This paper describes the main performance of a high precision microdensitometer. It also presents the design method of a closed loop optimal control system with a mini-computer and the methods for resolving the contradiction for real time processing between limited computer memory capacity and large quantities of system information taken in and sent out by "fictitious data area."

AUTHOR: GUO Zhaozeng [6753 0340 2582]

ORG: Beijing Institute of Control Engineering

TITLE: "The Design of Digital PLL"

SOURCE: Beijing ZIDONGHUA XUEBAO [ACTA AUTOMATICA SINICA] in Chinese No 1, 1982 pp 9-17

TEXT OF ENGLISH ABSTRACT: In this paper a kind of digital PLL (phase lock-loop) with a new compensating network is presented which can be used in the low frequency (<1 H) phase locking system. The features of PLL are high precision, quick dynamic response and large locking range.

AUTHOR: CHEN Junqiang [7115 0193 1730]
WANG Yizhong [3769 0110 1813]
et al.

ORG: All of the Shanghai Institute of Physiology, Chinese Academy of Sciences

TITLE: "A Microcomputer System for Auditory Research"

SOURCE: Beijing ZIDONGHUA XUEBAO [ACTA AUTOMATICA SINICA] in Chinese No 1, 1982
pp 18-26

TEXT OF ENGLISH ABSTRACT: The microcomputer system consists of a newly designed mainframe (including four microcomputer chips, 8085, 8155, 8185 and 8755, a multi-waveform generator, a special keyboard, a display panel and interfaces) and peripherals (including an XY plotter, an oscilloscope, a camera, etc.). The system can generate the complex stimulating sound with programmable parameters, process the bioelectric pulses recorded from the experimental animal, change the method of experimental observation according to the results obtained, transfer the resulting data to the XY plotter and plot it in the form of a histogram. A series of programs for routine experiments is available and easy to use. In addition, there is also a variety of subroutines in the EPROM. It is possible and convenient to make new programs according to the user's intention. By combining digital and analogue circuits the system can be built with little hardware resources and investment and have a reasonable performance.

AUTHOR: ZHOU Ming [0719 2494]

ORG: Thermal Power Engineering Research Institute, Ministry of Electric Power

TITLE: "A New Series of Valve Electric Actuators"

SOURCE: Beijing ZIDONGHUA XUEBAO [ACTA AUTOMATICA SINICA] in Chinese No 1, 1982
pp 27-31

TEXT OF ENGLISH ABSTRACT: This paper deals with the designing properties and industrial applications for a new series of valve electric actuators. The actuators are equipped with precise torque controllers and travel controllers, semiauto manual-electric selectors with low ratio of speed for manual control and specially-designed motors, etc. They perform satisfactorily and work reliably.

AUTHOR: LI Xu [2621 2485]

ORG: Shanghai Power Equipment Research Institute

TITLE: "Feedforward Control To Be Used in Practical Engineering"

SOURCE: Beijing ZIDONGHUA XUEBAO [ACTA AUTOMATICA SINICA] in Chinese No 1, 1982
pp 32-38

TEXT OF ENGLISH ABSTRACT: The single and multi-loop feedforward control often used in practical engineering are discussed in this article. The objects to be controlled are divided into two groups, self-balancing and non-self-balancing. For each group the transfer function is transferred into a standard expression. Various types of feedforward controllers and their respective parameter calculation formulas are derived by low-order approximation.

The above results and method can be used in the multivariable control system to find out every element of the feedforward transfer function matrix and calculate its appropriate parameters.

AUTHOR: DING Guichun [0002 2710 2504]
ZOU Huina [6760 1979 0763]

ORG: Beijing Yongding Computation Station

TITLE: "The Digital Correction Problem in the Hybrid Simulation of Continuous Systems"

SOURCE: Beijing ZIDONGHUA XUEBAO [ACTA AUTOMATICA SINICA] in Chinese No 1, 1982
pp 39-48

TEXT OF ENGLISH ABSTRACT: In this paper, the general and particular aspects of the digital correction in the digital-analog hybrid simulation of continuous systems are introduced, and the theoretical property of the digital correction network is deduced. It is pointed out that some factors must be considered when we choose the digital correction network, e.g., realizability, stability, damping and bandwidth. Three methods for choosing the correction network are introduced. Finally, the relationship between the precision of the network and its compatibility is shown with an example.

AUTHOR: DENG Julong [6772 5112 7893]

ORG: Huazhong Institute of Technology

TITLE: "The Least Parameters Controller of Decentralized Control System"

SOURCE: Beijing ZIDONGHUA XUEBAO [ACTA AUTOMATICA SINICA] in Chinese No 1, 1982
pp 49-54

TEXT OF ENGLISH ABSTRACT: Based on Tu et al's model of reference, the simplest structure and the least parameters controller (the most economical controller) to stabilize the given decentralized control system are studied in this paper. The existential theorem and the transfer function of the most economical controller by which the poles assignment for the given system may be obtained are proposed.

AUTHOR: XU Ningshou [1776 1380 1108]
ZHENG Bing [6774 0365]

ORG: Both of Beijing Polytechnic University

TITLE: "Analysis and Optimal Control of Time-varying Linear Systems Using Block-pulse Functions"

SOURCE: Beijing ZIDONGHUA XUEBAO [ACTA AUTOMATICA SINICA] in Chinese No 1, 1982
pp 55-67

TEXT OF ENGLISH ABSTRACT: Some useful operational properties of the block-pulse functions are developed. By applying these properties to the analysis and optimal control of time-varying linear systems with a quadratic performance index, the piecewise constant solutions equally distributed, which are simple in form and convenient for use or implementation, are obtained. Another advantage of this method is that any positive integer can be chosen as the number of sub-intervals, whereas in the case of Walsh function approximation the choice can only be made from 2, 4, 8, 16, 32, etc. Therefore, in many practical situations computation and control of higher precision can be achieved without expending excessive memory capacity and calculating time. The recursive algorithms of the solutions are illustrated by appropriate examples.

AUTHOR: QIAN Weide [6929 0787 1795]
WANG Enping [3769 1869 1627]
WANG Chaozhu [3769 2600 3796]

ORG: QIAN of the Beijing Institute of Control and Electronic Technology; WANG Enping and WANG Chaozhu both of the Institute of Systems Science and Mathematical Sciences, Chinese Academy of Sciences

TITLE: "Structural Characterization for Linear Multivariable Time-invariant Systems without Steady or Structurally Steady Errors"

SOURCE: Beijing ZIDONGHUA XUEBAO [ACTA AUTOMATICA SINICA] in Chinese No 1, 1982 pp 68-77

TEXT OF ENGLISH ABSTRACT: In this paper, the structural characterization of linear multivariable time-invariant systems without steady or structurally steady errors is demonstrated in the frequency domain. A transfer function approach is given for designing the compensator without structurally steady error.

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CSO: 4009/239

AUTHOR: LUO Yinfang [5012 6892 5364]
LI Wenyin [2621 2429 6892]

ORG: Both of Research Institute of Computers, Chinese Academy of Sciences

TITLE: "The Application of Logic Models to Computer Design"

SOURCE: Beijing DIANZI JISUANJI DONGTAI [COMPUTER REVIEW] in Chinese No 12, Dec 81
pp 27-31

ABSTRACT: This paper describes the application of a logic model to the logic design of a large scale high speed computer with a complex logic structure. This computer uses ECL small scale integrated circuitry and medium scale integrated circuitry. The structure of the model and the computer program which implemented that model are described. This program was written in the JLY-111 language and applied to the 111 computer. The article describes the logic functions of the model and the computer's instruction set. It also discusses the verification of the model. Through the model 20 logic design, errors were found and corrected. Everything that was implemented in the model was later found to be free of logic errors. This greatly shortened the period of hardware development.

AUTHOR: ZHANG Shuwen [1728 3219 2429]

ORG: Research Institute of Computers, Chinese Academy of Sciences

TITLE: "A Study of a Four-bit Half-adder"

SOURCE: Beijing DIANZI JISUANJI DONGTAI [COMPUTER REVIEW] in Chinese No 12, Dec 81
pp 32-35

ABSTRACT: This paper describes a four-bit half adder circuit with a rather high degree of integration and rather strong logic function which is mainly applied to full adders and test circuits. These are components with high speed and reliability requirements. The paper discusses considerations involved in guaranteeing reliability and selecting circuit technology to implement various logic functions as well as the principles of half adder function. Density considerations were also discussed. Four half adders were put on one chip. An evaluation shows that the half adder has high suitability and effectiveness, its application is convenient, and it meets design requirements. It is also advantageous in increasing speed and reliability. It is being widely applied in China in large scale computer engineering and in test machines used in support of large scale integrated circuits.

AUTHOR: XU Jun [1776 3182]

ORG: Research Institute of Computers, Chinese Academy of Sciences

TITLE: "On the Influence of Hamming Code on Internal Reliability and Its Reliability Measures"

SOURCE: Beijing DIANZI JISUANJI DONGTAI [COMPUTER REVIEW] in Chinese No 12, Dec 81 pp 23-26, 31

ABSTRACT: When the Hamming code is implemented in internal storage it can raise reliability by virtue of its capacity to discover two-place errors and correct one-place errors. This article examines 3 different methods of implementing the Hamming code and their relative effectiveness. In the first method, if we encounter a one-place error we output a correction but do not write the correction back into memory. We can detect two-place errors but the system effectiveness is low. This method is used in the CDC CYBER-172 computer. In the second method, when a one-place error is encountered the correction is written into memory once. Two-place errors can be detected but with limited system effectiveness. In the third method, if we have a fixed error it is corrected without loss of information. This method is used in large scale computers produced in China. This article purports to establish reliability models for the 3 methods and describe their mathematical bases. It identifies 2 parameters which strongly impact on the effectiveness of Hamming code. These are:

[continuation of DIANZI JISUANJI DONGTAI No 12, 1981 pp 23-26, 31]

μ : the proportion of multi-place errors to one-place errors, and K: the proportion of random to fixed errors. The article concludes that the third method is the ideal one. The first 2 methods tend to be unreliable, depending on changes in K. If the value of μ is less than .11 reliability can be increased by an order of magnitude or more. On the other hand if unsuitable methods are adopted the Hamming code contributes very little to increased reliability.

AUTHOR: GAO Zhongcan [7559 0112 2347]

ORG: Research Institute of Computers, Chinese Academy of Sciences

TITLE: "Pre-processing Techniques for the Recognition of Hand Written Characters"

SOURCE: Beijing DIANZI JISUANJI DONGTAI [COMPUTER REVIEW] in Chinese No 12, Dec 81 pp 41-46, 11

ABSTRACT: This article briefly describes traditional OCR techniques and then points out that most people in China, as in Japan, do not use typewriters; therefore, the recognition of hand written characters is more suitable. China has produced a page type OCR that can recognize over 60 hand written numbers, letters, and symbols, and which allows for a fair amount of liberty in the way the characters are formed. It uses many different recognition methods. The difficulties in recognizing hand written characters are pointed out, such as the lack of standardization in form, differences in size, and the complex variations in the way they are written. Also in evaluating the information content of the characters, the problem of white holes and black specks is pointed out. The various techniques to solve these problems can be implemented with hardware or software, or a combination of the two. Hardware is fast but is very difficult to change. Software is flexible but tends to be slow. The role of the flying spot scanner in converting light to electrical impulses and the digitization of the character is discussed. Techniques for finding, measuring, and separating the characters are discussed, along with techniques for getting rid

[continuation of DIANZI JISUANJI DONGTAI No 12, 1981 pp 41-46, 117]

of interference. Standardization and character refining are treated. Research indicates that the above mentioned methods amply demonstrate the effectiveness of hardware and flexibility of control, which meets the requirements of each type of recognition method. The effectiveness of the pre-processing is good but the processing speed is not high. This can be improved with additional hardware.

AUTHOR: YE Zhiquan [0673 1807 5425]

ORG: Beijing Research Institute No 9

TITLE: "A Phase-locked Loop System Applied to the Segregation of High Density Data"

SOURCE: Beijing DIANZI JISUANJI DONGTAI [COMPUTER REVIEW] in Chinese No 12, Dec 81
pp 47-50

ABSTRACT: For many years the phase-locked loop (PLL) has been an internationally recognized effective component. It has a longer history than the transistor and is widely used in data transmission, satellite communications, television receivers, magnetic disks and tapes, etc. Following the development of integrated circuits, the phase-locked loop has become an important commercial product. Because the scale of integration in China is not high, it is necessary to increase circuit capacity and simplify logic as much as possible, especially in magnetic storage technology. The article describes various components used in PLL systems, such as the MC 4044 pulse detector and the MC 4344 lowpass filter. The article points out that the key to increasing the precision of PLL lies in increasing the frequency value N . If N equals 2 the greatest phase error is π . If N equals 4 it is $\pi/2$, and if N equals 8 it is $\pi/4$. Characteristics of a phase-locked loop where N equals 4 are considered, and its principles of operation are examined in some detail.

6168

CSO: 4009/223

Engineering

AUTHOR: LOU Zhiwen [2869 1807 2429]
TONG Yunsheng [4547 0061 3932]
MIN Xing [7036 5887]

ORG: All of the Department of Engineering Mechanics

TITLE: "The Applications of the Finite Element Method to Transient Thermo-elasto-plastic Problems"

SOURCE: Xi'an JIAOTONG DAXUE XUEBAO [JOURNAL OF XI'AN JIAOTONG UNIVERSITY] in Chinese No 6, Dec 81 pp 1-8

TEXT OF ENGLISH ABSTRACT: The computer-aided finite element method is adopted to solve the transient thermo-elasto-plastic problems. Some numerical results successfully show the efficacy of the method applied. One result of heat field is compared with the data from experimentation and Rykalin's formula. The other result of transient thermo-elasto-plastic problems with assumed temperature distribution can be compared with that of Boley.

It may be expected that the method adopted can be applied to general transient thermo-elasto-plastic problems. However, it must be further improved for more complicated ones.

AUTHOR: FENG Hua [7458 7520]
JIANG Deming [5592 1795 2494]

ORG: Both of the Department of Power Machinery Engineering (II)

TITLE: "A Study on the Heat Release Rate and Heat Release Efficiency of a Direct Injection Diesel Engine"

SOURCE: Xi'an JIAOTONG DAXUE XUEBAO [JOURNAL OF XI'AN JIAOTONG UNIVERSITY] in Chinese No 6, Dec 81 pp 9-20

TEXT OF ENGLISH ABSTRACT: This paper gives an account of an extensive study on the fuel heat release rate of a direct injection diesel engine. The research consists of three parts as follows:

- 1) Improving of the measuring accuracy of the indicator diagrams and the data processing method.
- 2) Introducing a new concept of instantaneous heat release efficiency according to the Second Law of Thermodynamics.
- 3) The application of the method of superposition to two branches of the Weibe Combustion Curve to fit the heat release rate curves in various performances of direct injection diesel engines.

AUTHOR: ZHAO Ruhuai [6392 3067 2037]
CHEN Xiaojun [7115 1420 0689]

ORG: Both of the Department of Mathematics

TITLE: "The Universal Definition of Neartude for Fuzzy Subsets and the Grade of Imprecision"

SOURCE: Xi'an JIAOTONG DAXUE XUEBAO [JOURNAL OF XI'AN JIAOTONG UNIVERSITY] in Chinese No 6, Dec 81 pp 21-28

TEXT OF ENGLISH ABSTRACT: In this paper the universal definition of the concept of neartude for fuzzy subsets is given and it is pointed out that the general concept of neartude is always interrelated with the specific fuzzy measure space. In addition, the neartudes on some fuzzy measure spaces are discussed. The relation between the grade of imprecision and the neartude is found. In particular, the relation between the neartude σ and the fuzzy entropy is established.

AUTHOR: XU Jinyuan [6079 2516 3293]
XU Tongmo [1776 6639 2875]

ORG: Both of the Department of Power Machinery Engineering (I)

TITLE: "Mechanism of Gas Flow Distribution in Quenching Heat Exchangers"

SOURCE: Xi'an JIAOTONG DAXUE XUEBAO [JOURNAL OF XI'AN JIAOTONG UNIVERSITY] in Chinese No 6, Dec 81 pp 29-39

TEXT OF ENGLISH ABSTRACT: In this paper the mechanism of distribution of gas flow among the heat-transfer tubes of a quenching heat-exchanger is fully discussed.

The gas, flowing into the inlet distributor, decelerates continuously until it is distributed among the heat-transfer tubes. For the diffuser, it is very important to prevent the separation of the boundary layer. The angle of inclination of the cascade arrangement of the collectors is one of the essential factors for improving the nonuniform distribution among the heat-transfer tubes on the inner, middle and outer circles. The distributive plate is an important element for improving the nonuniform distribution around the circular circumference in the case of a double-inlet distributor.

The outlet collector, if properly designed, will be harmless for the distribution of gas among the heat-transfer tubes.

[Continuation of JIAOTONG DAXUE XUEBAO No 6, Dec 81 pp 29-39]

The uniformity of gas flow distribution among the heat-transfer tubes is determined by both the uniformity of resistance of heat-transfer tubes and the performance of the inlet distributor. When the pressure drop of the resistance of heat-transfer tubes is far greater than the kinetic head in the inlet distributor, the performance of the inlet distributor will have little influence.

A method has been developed to predict the uniformity of gas flow among the heat-transfer tubes of the prototype heat-exchanger with the help of data obtained in the model test.

AUTHOR: YAN Wenbin [6768 2429 1755]
TU Mingjing [3205 6900 2468]

ORG: Both of the Strength of Metals Research Institute

TITLE: "The Crack Initiation and Propagation in Constructional Steels under Impact Load and Low Temperatures"

SOURCE: Xi'an JIAOTONG DAXUE XUEBAO [JOURNAL OF XI'AN JIAOTONG UNIVERSITY] in Chinese No 6, Dec 81 pp 41-49

TEXT OF ENGLISH ABSTRACT: Based on a study of the fracture process of notched specimens subjected to the impact bending load, this paper discusses the relationship between the p - δ oscillogram of the impact fracture process and structure of the fracture surface. The impact toughness a_k can be resolved into a_i to represent the specific energy of the crack initiation and a_p to represent the specific energy of the crack propagation. The law that governs the change of the specific energies a_i and a_p with temperature was studied. It was found that the drop in the value of a_k is mainly controlled by that of a_p and the value of a_i is unchanged. It is also found that for the two materials tested within the range of the toughness-brittle transition temperature, there is a linear relationship between the impact toughness a_k and the fraction of fibrous fracture $FF\%$, which can be approximately represented by $a_k = a_i + B \times FF\%$. A simple and convenient method for obtaining the crack propagation specific energy a_p can be established.

[Continuation of JIAOTONG DAXUE XUEBAO No 6, Dec 81 pp 41-49]

By means of an electron microscope, the microscopic appearances in different parts of the fracture surface were observed and the change of the fracture mechanism with temperature drop was analyzed. The differences in the resistance to brittle fracture of the different materials under low temperatures are fully explained.

AUTHOR: GUO Dazhan [6753 1129 1455]
HU Zhizhong [5170 1807 1813]
AN Renjie [1344 0088 2638]
et al.

ORG: All of the Strength of Metals Research Institute

TITLE: "Fatigue Crack Initiation and Propagation in Nodular Cast Iron"

SOURCE: Xi'an JIAOTONG DAXUE XUEBAO [JOURNAL OF XI'AN JIAOTONG UNIVERSITY] in Chinese No 6, Dec 81 pp 51-60

TEXT OF ENGLISH ABSTRACT: The fatigue fracture of nodular cast iron is investigated by using the principle and method of linear elastic fracture mechanics. Nodular cast irons whose matrices are composed of ferrite, pearlite and 80 percent pearlite combined with bull's eye ferrite are investigated. Due to the difference in the matrix composition these three cast iron varieties all exhibit different properties in strength, plasticity and toughness.

The number of stress cycles N_0 for initiation of fatigue crack, the rate of fatigue crack propagation da/dN , the threshold stress intensity factor range ΔK_{th} and the total number of stress cycles N_f' for fatigue fracture were investigated with different loading regimes and different notch sharpness in the specimen. It has been found that ΔK_{th} in nodular cast iron is rather high; ΔK_{th} decreases as the percentage

[Continuation of JIAOTONG DAXUE XUEBAO No 6, Dec 81 pp 51-60]

of pearlite increases until about 80 percent pearlite, when it remains almost unchanged with further increases of the percentage of pearlite; the variation of N_0 depends mainly on the strength of materials in the case of blunt notched specimens and on the plasticity of materials in the case of sharp notched specimens; da/dN decreases as plasticity increases; and N_f' increases as strength increases in blunt specimens under high cycle fatigue while N_f' increases in sharp notched specimens under low cyclic fatigue.

The characteristics and microfracture mechanism of fatigue crack initiation and propagation in nodular cast iron have been described and explained in light of metallographic and electron fractographic observations.

AUTHOR: SU Junyi [5685 0193 5030]

ORG: Department of Mechanical Engineering

TITLE: "The Effect of Natural Convection on the Solute Distribution in Horizontal Normal Solidification"

SOURCE: Xi'an JIAOTONG DAXUE XUEBAO [JOURNAL OF XI'AN JIAOTONG UNIVERSITY] in Chinese No 6, Dec 81 pp 61-70

TEXT OF ENGLISH ABSTRACT: In this paper a calculated method is described and modified based on the momentum equilibrium, thermal equilibrium and solute equilibrium. The thickness of solute boundary layer δ_s is calculated, and then effective distribution coefficient k_e is calculated. Finally the solute distribution in solid state is obtained. The conclusion agrees well with experimental data under the following conditions: $\phi 6 \times 100$ mm Pb-1% Sb alloy; solidification velocity R 1.5×10^{-3} cm/sec in horizontal normal state; temperature gradient G_L : $80^\circ\text{C}/\text{cm}$; k_e obtained by experimental method equal to 0.42, while based on the calculative method of this paper k_e equal to 0.419.

AUTHOR: XIA Daozhi [1115 6670 2972]
G. T. Heydt

ORG: XIA of Xi'an Jiaotong University; Heydt of Purdue University

TITLE: "Harmonic Power Flow Studies (Part II)--Implementation and Practical Application"

SOURCE: Xi'an JIAOTONG DAXUE XUEBAO [JOURNAL OF XI'AN JIAOTONG UNIVERSITY] in Chinese No 6, Dec 81 pp 71-79

TEXT OF ENGLISH ABSTRACT: This is a companion paper to a paper of the same title, Part I, in which the electric power flow problem is reformulated to account for harmonic signals which arise from nonlinear loads. In this paper, implementation and practical applications are discussed. The problem of initialization of bus voltages (including harmonics) is considered and convergence of the algorithm is assessed from the theoretical viewpoint and from the results of actual studies. The principal content of this paper is two examples, both containing nonlinear loads (rectifiers).

Conclusions and recommendations are made concerning the application of harmonic power flow studies. The salient recommendation is that in the presence of nonlinear loads (especially during light loading) or in systems containing HVDC lines, harmonic signals should not be ignored.

AUTHOR: WANG Jimei [3769 1323 2734]

ORG: Department of Electrical Engineering

TITLE: "Research on Power Fuse Coordinated with Vacuum Contactor"

SOURCE: Xi'an JIAOTONG DAXUE XUEBAO [JOURNAL OF XI'AN JIAOTONG UNIVERSITY] in Chinese No 6, Dec 81 pp 81-90

TEXT OF ENGLISH ABSTRACT: The features and construction of the power fuse coordinated with vacuum contactor are elucidated in this paper. Through a series of analysis in theory and specific calculations, the layout of the power fuse is rational and reliable. Finally, a model power fuse has been designed and made in accordance with the layout mentioned above. In addition, the specified tests have been carried out on it. The results of the type tests showed that the performance of the model power fuse was in conformity with the technical parameters required.

AUTHOR: XU Jianxue [1776 0256 1331]

ORG: Department of Engineering Mechanics

TITLE: "Characteristic Curves for Calculating the Natural Frequency of Elastic Supported Busbars (Beams)"

SOURCE: Xi'an JIAOTONG DAXUE XUEBAO [JOURNAL OF XI'AN JIAOTONG UNIVERSITY] in Chinese No 6, Dec 81 pp 91-98

TEXT OF ENGLISH ABSTRACT: In this paper, by means of analysis and programmed computation, the natural frequency characteristic curves of one-to-three span elastic supported beams have been plotted and the rule governing the change of natural vibration modes has been explained. It has been found that for a N span beam, for every N mode from lower to higher orders there is a frequency point common to the N modes of vibration, and that the stiffness ratios corresponding to these points are independent of the number of spans. By using these curves, the natural frequencies of elastic supported beams corresponding to various modes can be evaluated exactly and conveniently. Also presented is a simple algorithm for calculating the natural frequencies of beams on elastic supports with mass.

AUTHOR: ZHANG Zhensheng [1728 6966 3932]
LI Yinsong [2621 5543 2646]

ORG: ZHANG of the Department of Engineering Mechanics; LI of the Strength of Metals Research Institute

TITLE: "A Study on the A-N Curve and the Resistance to Repeated Impact in the Repeated Impact Test"

SOURCE: Xi'an JIAOTONG DAXUE XUEBAO [JOURNAL OF XI'AN JIAOTONG UNIVERSITY] in Chinese No 6, Dec 81 pp 99-108

TEXT OF ENGLISH ABSTRACT: In this paper the A-N repeated impact curve and the resistance of materials to repeated impacts are analyzed from the viewpoint of fatigue failure, and rather important suggestions for the improvement of current methods of analysis have been advanced.

The authors are of the opinion that current methods of investigating the relative position of the A-N curves of different materials and of deciding whether there exists a point of intersection can all be replaced by a much cheaper and simpler method using the usual mechanical properties of materials, such as tensile strength σ_b , percentage elongation δ , impact value α_k . Accordingly an α_k - σ_b diagram method is proposed. The application of the α_k - σ_b diagram method is illustrated by examples.

9717

CSO: 4011/1

Internal Combustion Engine Engineering

AUTHOR: MAO Jiqing [5403 4949 1987]

ORG: Shanghai Diesel Engine Works

TITLE: "The Design of the Cylinder Head of Diesel Engine"

SOURCE: Shanghai NEIRANJI GONGCHENG [CHINESE INTERNAL COMBUSTION ENGINE ENGINEERING] in Chinese No 4, 1981 pp 3-14

TEXT OF ENGLISH ABSTRACT: This article investigates the design and modification of the cylinder head by analyzing the problems encountered in the development of the cylinder head of series 135 diesel engines. It raises some problems which should be noticed during the design of the cylinder head.

AUTHOR: WU Zhaohan [0702 0340 3352]
CHEN Shenlong [7115 3234 7893]

ORG: Both of Beijing Institute of Technology

TITLE: "The Optimum Design of Valve-springs of Internal Combustion Engines"

SOURCE: Shanghai NEIRANJI GONGCHENG [CHINESE INTERNAL COMBUSTION ENGINE ENGINEERING] in Chinese No 4, 1981 pp 15-22

TEXT OF ENGLISH ABSTRACT: Based on the analysis of various design requirements, the method of optimum design of valve-spring and its specific mathematical model satisfying different conditions of internal combustion engines are established. Furthermore, a simpler program--the automatic refining net method together with its b1 program--was used to obtain the solution of the model. Finally, the optimum design of the valve-spring of 12150L diesel engine was demonstrated on the DJS-8 computer as an example, with results indicating that it not only saves much time but also improves the design quality by using the suggested model and its calculation program.

AUTHOR: LIN Jielun [2651 2638 0243]

ORG: Xi'an Jiaotong University

TITLE: "Thermodynamic Analysis of the Indicator Diagram of a Motoring Diesel Engine"

SOURCE: Shanghai NEIRANJI GONGCHENG [CHINESE INTERNAL COMBUSTION ENGINE ENGINEERING] in Chinese No 4, 1981 pp 23-31

TEXT OF ENGLISH ABSTRACT: This paper gives the thermodynamic analysis of the indicator diagram of a motoring diesel engine at various speeds, presenting the check-up methods for location of TDC and for calculation of heat transfer loss. Moreover, the various factors influencing the accuracy of the indicator diagram are studied.

AUTHOR: LI Jingpei [2621 2529 1014]
TANG Shenzhu [0781 6500 6999]
GUO Zhonglan [6753 6945 5695]
WANG Ying [3769 3853]

ORG: LI, TANG and GUO all of the Shanghai Ship and Shipping Research Institute, Ministry of Communications; WANG of the Dongfeng Shipyard, Zhongqing Changjiang River Shipping Company

TITLE: "The Test and Investigation of Improved Turbocharged System of 8E350Z Two-stroke Diesel Engine"

SOURCE: Shanghai NEIRANJI GONGCHENG [CHINESE INTERNAL COMBUSTION ENGINE ENGINEERING] in Chinese No 4, 1981 pp 32-40, 45

TEXT OF ENGLISH ABSTRACT: This paper mainly describes the investigation and experiment in the improvements of the turbocharging system of the model 8E350Z engine, a two-stroke loop-scavenging medium-speed diesel. Its aim is to improve its fuel economy. According to the simulating calculation given by the computer, the shortcoming of the original pulse turbocharging system is analyzed and the reason for the new constant-pressure supercharging system improving the fuel economy explained, with the improved scheme of the supercharging system and its basic parameters matched with the diesel also determined. By the improved supercharging system, the fuel consumption of diesel engines and the temperature before turbine have appreciably decreased, and the reliability of the engine has also improved.

AUTHOR: LIU Demin [0491 1795 2404]

ORG: Chinese Academy of Railway Science

TITLE: "Experimental Investigation on the Duct Type Diffusers of Centrifugal Compressor Used for Turbocharger"

SOURCE: Shanghai NEIRANJI GONGCHENG [CHINESE INTERNAL COMBUSTION ENGINE ENGINEERING] in Chinese No 4, 1981 pp 46-50

TEXT OF ENGLISH ABSTRACT: In this paper some results of experimental investigation on the different duct-type diffusers of centrifugal compressors used for turbochargers are discussed. The purpose of the research is to study the influence of divergent ratio on the performance of the duct-type diffuser. Test results of such diffusers designed according to any of the following criteria, viz, 1. $cdc/dl=const$, 2. $1/c^3 dc/dl=const$, 3. constant divergent angle or 4. variable divergence with initial angle greater than the final one, show that the better results can be obtained with designs according to the second or fourth criterion.

AUTHOR: XU Huijuan [6079 1979 1221]

ORG: Wuxi Diesel Engine Works

TITLE: "Design and Development of the New Type Composite Oil Ring with Helical Spring"

SOURCE: Shanghai NEIRANJI GONGCHENG [CHINESE INTERNAL COMBUSTION ENGINE ENGINEERING] in Chinese No 4, 1981 pp 51-58

TEXT OF ENGLISH ABSTRACT: In this paper, the design basis, calculation method and construction feature of the new type composite oil ring with helical spring used in the medium and high speed diesel engine are described. The experimental results of these oil rings used on the model 120 engine show that: their longer life, lower oil consumption and better working suitability especially for distorted cylinders make themselves used successfully on the three-ring pistons and good for developing high speed and a highly rated diesel engine.

AUTHOR: CHEN Zhaozhi [7115 2507 4460]

ORG: Shanghai Internal Combustion Engine Research Institute

TITLE: "The Rapid Wearability Test of Cylinder Liner and Piston Rings"

SOURCE: Shanghai NEIRANJI GONGCHENG [CHINESE INTERNAL COMBUSTION ENGINE ENGINEERING] in Chinese No 4, 1981 pp 59-65

TEXT OF ENGLISH ABSTRACT: This paper describes the method of the rapid wearability test on engine rigs and provides the experimental results of different kinds of cylinder liners and piston rings. The optimum selections of materials used for cylinder liners and piston rings in diesels of small and medium power are proposed according to the analysis of their tribology.

AUTHOR: WEI Rongnian [7614 2837 1628]

ORG: Harbin Institute of Ship Engineering

TITLE: "An Introduction to Measuring Technique Research of the Internal Combustion Engine in Japan"

SOURCE: Shanghai : IRANJI GONGCHENG [CHINESE INTERNAL COMBUSTION ENGINE ENGINEERING] in Chinese No 4, 1981 pp 66-70

TEXT OF ENGLISH ABSTRACT: This is a brief report of our visit to Japan University. This paper introduces the simulating sets and measuring technique of the working process and engine surface vibration, etc., of the internal combustion engine.

AUTHOR: WU Guangwei [0702 1684 0143]

ORG: Dalian Diesel Locomotive Research Institute

TITLE: "The Research and Measurement of the End Thrust of the Turbocharger"

SOURCE: Shanghai NEIRANJI GONGCHENG [CHINESE INTERNAL COMBUSTION ENGINE ENGINEERING] in Chinese No 4, 1981 pp 71-75

TEXT OF ENGLISH ABSTRACT: This paper presents the basic principle of ascertaining the end thrust of the turbocharger by means of measuring the strain of the thrust plate, illustrating the measuring method, apparatus and instruments.

The measuring results are given and their inexactness is estimated. At the same time, the correction of the temperature influences during measuring and the stress locating method are also recommended in detail.

9717

CSO: 4009/250

AUTHOR: YANG Zhongcheng [2799 1350 1004]
LI Ao [7812 7663]

ORG: Both of the First Affiliated Hospital, Third Military Medical College,
Chongqing

TITLE: "A Clinical Analysis of Causes of Death in Burns"

SOURCE: Beijing JIEFANGJUN YIXUE ZAZHI [LIBERATION ARMY MEDICAL JOURNAL]
in Chinese Vol 6 No 6, Dec 81 pp 325-327, 322

TEXT OF ENGLISH ABSTRACT: Between January 1970 and December 1979, 69 deaths occurred in 1430 burn patients admitted to our burn center. Fatal complications and the major lethal cause were analyzed.

It is rather conspicuous that during the resuscitation period, the principal cause of death was, in most instances, directly related to acute respiratory insufficiency, while after this period most of the patients died of severe infection. There were only a few patients who succumbed directly to burn shock; however, it is noteworthy that shock was an important factor predisposing patients to other fatal complications.

From the therapeutic point of view, the fatal factors may be divided into two groups: The first group consists of those factors resulting from improper handling

[Continuation of JIEFANGJUN YIXUE ZAZHI Vol 6 No 6, Dec 81 pp 325-327, 322]

of patients, such as organ failures following inadequate initial replacement therapy, delayed tracheotomy in the case of acute respiratory obstruction, septicemia or burn wound sepsis following inadequate escharectomy, or poor quality of biological coverage after escharectomy, etc. The second group consists of those factors, the exact nature of which is not yet clear, and to which the present therapeutic measures are less effective or ineffective, such as extensive body surface burn with concomitant severe inhalation injury, early fulminating septicemia, "progressive toxemia," disseminating aspergillus infection, etc.

AUTHOR: MAO Jianyao [3029 1017 5069]
MAO Qingwu [3029 1987 2976]
ZHU Yanping [2612 5333 5493]
PENG Qiliang [1756 3825 5328]
ZHAO Jinyuan [6392 6855 0997]
et al.

ORG: MAO Jianyao, MAO Qingwu and ZHU, et al., all of the Second Military Medical College, Shanghai; PENG and ZHAO both of the Staff Hospital, Lanzhou Chemical Industry Company

TITLE: "Anticyanide Effect of Co₂EDTA and Its Rescuing Effect on Poisoned Dogs in Agonal State"

SOURCE: Beijing JIEFANGJUN YIXUE ZAZHI [LIBERATION ARMY MEDICAL JOURNAL] in Chinese Vol 6 No 6, Dec 81 pp 344-347, 324

TEXT OF ENGLISH ABSTRACT: Dicobalt ethylene diamino-tetraacetate (Co₂ EDTA) has been known as a good anticyanide agent. When used singly, Co₂ EDTA raised the LD₅₀ of subcutaneous sod cyanide 4.9 times, and the combination of Co₂ EDTA with sod thiosulfate raised the LD₅₀ 10 times in dogs.

Co₂ EDTA has a good resuscitating effect on cyanide poisoned dogs, even when their respiration had stopped for one to two minutes. Respiration was restored within

[Continuation of JIEFANGJUN YIXUE ZAZHI Vol 6 No 6, Dec 81 pp 344-347, 324]

4.6 minutes after an intravenous administration of the drug. The effect is better than that of the classical method of administering sod nitrite and sod thiosulfate in combination, which restored the respiration in about 13.4 minutes.

No significant side effects, except gastrointestinal disorder, were observed after using this drug. We found that 8 mg of Co₂ EDTA can neutralize 1 mg of CN⁻.

9717

CSO: 4009/253

Vacuums

AUTHOR: XING Jun [6717 6511]

ORG: None

TITLE: "The Vacuum Equipment Industry of the Bureau of General Machinery of the First Ministry of Machines Held Its 7th Industry-wide Conference in Lanzhou"

SOURCE: Shenyang ZHENKONG [VACUUM] in Chinese No 6, 25 Dec 81 p 79

ABSTRACT: The 7th industry-wide conference of the Vacuum Equipment Industry of the Bureau of General Machinery of the First Ministry of Machines was held on 7-12 Oct 81 in Lanzhou. Participants included 51 delegates of 19 units. Leaders of the Bureau of General Machinery, the Gansu Provincial Bureau of Machines, and the Department of Industry and Transportation of Lanzhou Municipal Committee also participated. The work of the industry since the 6th industry-wide conference was summarized, the work of consolidating the industrial management was discussed, and the experiences in improving product quality and the results of total quality control were reported. Domestic and foreign development in vacuum technology, the condition of the market, and the corresponding strategy were introduced by Shenyang Research Institute of Vacuum Technology. The delegates visited the Lanzhou Petrochemical Machinery Plant and the 510 Institute. Awards were presented to 9 units for 15 items of achievements in quality control. The 1982 industrial activities plan was discussed and approved. It was resolved that symposiums on rotary vacuum pump, slide valve vacuum pump, and oil diffusion pump should be called. A meeting of heads of groups will be held late in 1982 to examine the year's work and to study the activity plan for 1983.

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